NORTH PACIFIC OCEAN, OCTOBER 1939

By WILLIS E. HURD

Atmospheric pressure.—Over most of the North Pacific Ocean, as indicated by reports from island and coastal stations, the average barometer was close to normal. Only in the Aleutian region were pressures abnormal to a marked degree. At St. Paul Island, in the Bering Sea, the average barometer, 1,011.6 millibars (29.87 inches), was +8.2 millibars (+0.24 inches) above the normal of October. The Aleutian LOW this month lay over the Gulf of Alaska, with Kodiak having an average barometer of 1,003.1 millibars (29.62 inches) and a departure from normal of only +1.1 millibars (+0.03 inch).

The average North Pacific anticyclone this month extended as a belt from the west coast of the United States southwestward across Midway Island.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, October 1939, at selected stations*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	*Millibars*	*Millibars*		*Millibars*	
Point Barrow	1,013.7	+0.2	1,032	12,14	989	26
Dutch Harbor	1,010.0	+5.9	1,033	22	971	26
St. Paul	1,011.6	+8.2	1,029	21	991	29
Kodiak	1,003.1	+1.1	1,030	23	982	17
Juneau	1,009.6	−1.9	1,028	28	972	16
Tatoosh Island	1,016.2	−0.1	1,036	11	1,001	26
San Francisco	1,016.6	+0.3	1,027	27	1,006	24
Mazatlan	1,010.4	+0.2	1,012	18–20, 26, 27	1,006	1
Honolulu	1,015.3	−0.6	1,018	31	1,010	22
Midway Island	1,018.5	+1.5	1,028	29	1,006	2,3
Guam	1,009.5	−1.0	1,012	12	1,007	10,14
Manila	1,009.6	+0.5	1,012	[1] 1–3	1,003	8
Hong Kong	1,012.0	−1.7	1,019.3	31	1,002.0	9
Naha	1,012.7	+0.2	1,020	31	987	15
Titijima	1,013.7	+0.8	1,019	31	996	22
Petropavlovsk	1,007.7	−1.4	1,028	29	990	21

[1] And on other dates.

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Extratropical cyclones and gales.—Ship reports do not indicate October 1939 to have been appreciably stormier than the preceding month in middle and higher latitudes of the North Pacific. In fact, for the great stretch of the ocean lying between 130° and 155° west longitudes, no high winds were reported. Along the immediate coast of the United States, during the prevalence of cyclonic disturbances, the Swiftsure Bank Lightship, in 48°33′ N., 125°00′ W., had southeasterly gales of force 8 to 9 on the 1st, 16th, 18th, and 25th.

In east longitudes few gales due to extratropical causes occurred to the westward of the 170th meridian. These were of force 8 only, occurring on the 3d near 39° N., 157° E.; on the 12th near 44° N., 166° E.; and on the 13th near 30° N., 159° E. The greatest concentration of storminess along the middle and upper steamer routes occurred between about 170° E. and 155° W., scattered as to dates and localities between the 4th and 26th. The heaviest early gale in this region was of force 10, lowest barometer 984.1 millibars (29.06 inches), reported on the 4th by the American steamship *W. H. Berg*, near 50° N., 176° E. The most intense local development noted in connection with any of these storms occurred during the night of the 15th–16th near latitude 41° N., longitude 176° E. Here the Japanese steamship *Norway Maru*, in the center of the cyclone, had a low barometer of 976.0 millibars (28.82 inches) with a light southeasterly wind at 10 p. m. of the 15th, followed at midnight by a west wind of hurricane velocity. No further gales exceeding force 8 or 9 were reported until the 18th, when a westerly gale of force 10, with moderate depression of the barometer, occurred near 41° N., 166° W.

During the 21st to 23d a disturbance of moderate depth lay to the eastward of Midway Island. Local north to northeast gales of force 8 to 9 accompanied it, between latitudes 28°–32° N., longitudes 165°–172° W.

One of the deepest cyclones of the month lay over the Aleutian Islands on the 25th and 26th and crossed into the Gulf of Alaska on the 27th. At Dutch Harbor, on the 26th, pressure fell to 971 millimeters (28.67 inches). The highest wind reported on the 26th, in connection with the cyclone, was of force 9 from the northwest, near 55° N., 169° W.

Tropical cyclones and gales.—Elsewhere in this issue of the REVIEW is a report, by the Reverend Bernard F. Doucette, S. J., Weather Bureau, Manila, P. I., of four typhoons which occurred in the Far East during October 1939. The only data that may be added to the report are with reference to the final storm described, that of October 20–23. This typhoon was noted as passing close to the eastward of the Bonin (Ogasawara) Islands on the 23d and then inclining "to the northeast as it moved across the 150th meridian." According to a report received at this office from the Japanese motorship *Arimasan Maru*, the ship was evidently in this typhoon on the 24th. At 11 a. m., local time, she encountered a south-southeast gale of hurricane force, lowest barometer 979.9 millibars (28.94 inches), in 36°00′ N., 151°18′ E. At 2 p. m. the wind on ship was southwest, force 12. The typhoon's identity was lost after the 24th.

In the southeastern Pacific Tropics one cyclone occurred. It appears to have originated not far from 15° N., 106° W., on the afternoon of the 23d and to have moved about due north until it entered the Mexican coast at Cape Corrientes on the 25th. Two ships close to the coast south of the cape, one late on the 24th and the other early on the 25th, had southeast winds of force 7, with little depression of the barometer. Press reports from Mexico, however, indicate the storm to have wrought much damage to several coastal towns, to crops, and to communication lines, with some disruption to shipping. The American steamer *Nevadan* was reported severely battered by the storm off Manzanillo.

Tehuantepecers.—The first Tehuantepecer of the season occurred in the Gulf of Tehuantepec on the 16th with a north-northeast gale of force 8. On the 30th a force 7 wind was experienced, and on the 31st a northeaster of force 9.

Fog.—There was much less fog reported for the open Pacific than during the previous September, and most of the occurrences were observed during the early part of the month. In American coastal waters, ships reported 12 days each with fog off Washington and Oregon; 18 days, off California; and 2 days, off Lower California.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, OCTOBER 1939

By BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

Typhoon, October 3–12, 1939.—As a depression, which very likely formed over the Eastern Caroline Islands, this storm first manifested itself about 500 miles south-southeast of Guam, October 3, and moved west-northwest across the Pacific. It gradually increased to typhoon

strength as it moved over the ocean and threatened both central and northern Luzon. The situation on the afternoon of October 7 showed the center changing its direction to the northwest, a course which brought the typhoon across the Balintang Channel, passing about 30 miles southwest of Basco, Batan Islands, during the early morning hours of October 9. The next 3 days witnessed the typhoon weakening and disappearing over the southern part of the Formosa Channel.

At Basco, Batan Islands, the barometric minimum was experienced at 3 a. m. (Manila time) October 9, the value being 718.1 mm. (957.4 mb.) with east winds, force 12. Calayan, about 70 miles southwest of Basco, had a minimum of 724.8 mm. (966.3 mb.) at 1:40 a. m. October 9, the winds being from the west, force 9. No reports of loss of life were received and there did not seem to be any extensive property damage over Luzon.

The upper winds over Guam from October 1 to 5 backed from the southeast quadrant to the north and then veered to the southeast. Velocities were under 50 k. p. h. except the morning ascent of October 3, when east quadrant winds 45 to 60 k. p. h. appeared above 3,000 m. Over the Philippines, October 5 to 7, there was a southwest quadrant current flowing over Zamboanga and Cebu, which increased to values over 50 k. p. h.; while stations of the countries west of the China Sea, such as Saigon, Indochina, and Bandon, Thailand, did not have velocities over 35 k. p. h. The few reports available from Menado, Celebes Island, show weak variable winds aloft with southwest and west quadrant directions prevailing. It seems from this distribution of velocities that the air from the southwest was drawn toward the center. As the typhoon center crossed the Balintang Channel, the highest velocity reported was 80 k. p. h., the ascents during these days being short and infrequent.

Typhoon, October 7–13, 1939.—Very likely forming over the Eastern Caroline Islands, a depression appeared over the Pacific Ocean east-northeast of Guam and moving west-northwest, just as the preceding typhoon was changing its course to the northwest. When the new storm reached the regions about 120 miles northeast of Guam, it had acquired typhoon strength, and its progress across the ocean was along a course which gradually inclined from the west-northwest to the northwest and north. It was central about 350 miles east-southeast of Naha, October 11, apparently weakening. It recurved to the northeast and continued along this course, crossing the 150th meridian on October 13 as an extra-tropical depression, the intensity of which was unknown at the time this article was written.

Before October 11, the existence and intensity of this storm was only suspected. Only the observations from Guam were available, until the arrival of the S. S. *City of Elwood* in Manila, when data from the ship's log became available. This ship, on her way to San Bernardino Strait, first felt the typhoon October 7 and 8, her position being northeast of the center. On October 9, at 2 a. m. (ship's time), the barometric minimum was recorded, 746.0 mm. (994.6 mb.) with west by south winds, force 9, in latitude 16°54′ N., longitude 138°31′ E., her position now being southwest of the center.

Of the few pilot balloon ascents made at Guam from October 6 to 9, only that of the morning of October 7 is significant, when northwest winds, 38 to 53 k. p. h. up to 1,000 m., were reported.

Typhoon, October 10–18, 1939.—The morning weather map of October 10 showed the existence of a depression about 300 miles south of Guam, which then moved west-northwest about 200 miles. It intensified to typhoon strength before the next morning and it moved in a southwesterly direction during the morning hours. It seemed to be moving toward the regions south of Yap, but during the night of October 11–12, it changed to the northwest and kept this course across the ocean. When it reached the locality about 150 miles east-by-north of Basco, Batan Islands, it inclined to the north-northeast, moving quite rapidly. It passed close to and northwest of Naha and Oshima, all the time changing its direction toward the northeast and east. October 17 saw the storm weakening as it changed its course to the southeast, passing over the 150th meridian as a low pressure area, apparently of weak intensity.

The S. S. *Erling Brovig*, en route to Hong Kong, was under the influence of this typhoon October 15. The lowest barometer reading, as copied from the ship's log, was 725.7 mm. (967.5 mb.) at 7 p. m. (ship's time) in latitude 23°31′ N., longitude 125°56′ E. The winds were from the south-southwest, force 5. Before this, the ship had experienced east winds, force 10, and when the barometer was rising, southwest and west-southwest winds of force 10 to 12 were experienced. The morning observations, October 16, received from Naha, Nansei (Loochoo) Islands, showed a pressure of 740.0 mm. (986.6 mb.) with southwest winds of force 11. The afternoon observation of the same day from Oshima gave south-southwest winds of force 6 with lowest pressure at 739.0 mm. (985.3 mb.). A news dispatch from Japan, dated October 18, stated that 33 lives were lost due to this typhoon.

On October 10, the upper winds over Guam were from the east, with velocities from 44 to 71 k. p. h., up to 1,000 m., a very good indication of development around the center then south of the station. As the center moved over the ocean toward Formosa, being over 500 miles from the southern part of the Philippines, the southwesterly current over Zamboanga and Cebu was weak, Cebu reporting 60 k. p. h. at one level on the morning of the 15th, with the values reported at other times varying between 10 and 40 k. p. h. The few reports received from Menado, Celebes Island, showed weak variable winds, with east and southeast quadrant winds prevailing aloft, certainly indicating little danger for the Philippines.

Typhoon, October 20–23, 1939.—This storm first appeared as a vague low-pressure area which moved northwest to the ocean regions north-northwest of Guam, probably forming southeast of Guam. It became a depression, central about 300 miles northwest of Guam on the morning of October 21, and seemed to increase in intensity as it moved about 200 miles northeast of that locality. The next morning (22d) there was no doubt but that it was a typhoon, located about 200 miles south of the Bonins and moving in a northerly direction. It passed close to and east of the Bonins, according to available information, and then inclined to the northeast as it moved across the 150th meridian.

The lowest barometer reading at the Bonins (only synoptic data being available) was 747.0 mm. (995.9 mb.) on the morning of October 23, the winds being west, force 3. At Guam, the upper winds were weak, changing from the southwest and west quadrants to the southeast quadrant on October 21.